

## CLAIMS

1. An impeller for a blower characterized by: a blade (15); a plurality of notches (17) provided at predetermined intervals on a side edge of the blade (15); and a plurality of smooth portions (18), each being provided between a pair of the notches (17).

2. An impeller for a blower having: a circular support plate (14) having a rotational axis; and a plurality of blades (15) provided on a peripheral edge portion of the support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller being characterized by:

a plurality of notches (17) provided on an outer edge (15a) of a pair of side edges of each of the blades (15), and arranged at predetermined intervals along a longitudinal direction of the respective blades (15); and

a plurality of smooth portions (18), each being provided between a pair of the notches (17).

3. An impeller for a blower having: a circular support plate (14) having a rotational axis; and a plurality of blades (15) provided on a peripheral edge portion of the support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller being characterized by:

a plurality of notches (17) provided on an inner edge (15b) of a pair of side edges of each of the blades (15), arranged at predetermined intervals along a longitudinal direction of the respective blades (15); and

a plurality of smooth portions (18), each being provided between a pair of the notches (17).

4. An impeller for a blower having: a circular

support plate (14) having a rotational axis; and a plurality of blades (15) provided on a peripheral edge portion of the support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller  
5 being characterized by:

a plurality of notches (17) provided on both side edges (15a, 15b) of a pair of side edges of each of the blades (15), arranged at predetermined intervals along a longitudinal direction of the respective blades (15); and

10 a plurality of smooth portions (18), each being provided between a pair of the notches (17).

5. An impeller for a blower having: a circular support plate (14) having a rotational axis; and a plurality  
15 of blades (15) provided on a peripheral edge portion of the support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller being characterized by:

a plurality of notches (17) provided on an outer edge (15a) of a pair of side edges of a predetermined blade (15)  
20 selected from among the plurality of blades (15), arranged at predetermined intervals along a longitudinal direction of the predetermined blade (15); and

a plurality of smooth portions (18), each being  
25 provided between a pair of the notches (17).

6. An impeller for a blower having: a circular support plate (14) having a rotational axis; and a plurality of blades (15) provided on a peripheral edge portion of the  
30 support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller being characterized by:

a plurality of notches (17) provided on an inner edge (15b) of a pair of side edges of a predetermined blade (15)  
35 selected from among the plurality of blades (15), arranged at

predetermined intervals along a longitudinal direction of the predetermined blade (15); and

a plurality of smooth portions (18), each being provided between a pair of the notches (17).

5

7. An impeller for a blower having: a circular support plate (14) having a rotational axis; and a plurality of blades (15) provided on a peripheral edge portion of the support plate (14), extending in parallel to the rotational axis and having a predetermined blade angle, the impeller being characterized by:

a plurality of notches (17) provided on both side edges (15a, 15b) of a pair of side edges of a predetermined blade (15) selected from among the plurality of blades (15), arranged at a predetermined interval along a longitudinal direction of the predetermined blade (15); and

a plurality of smooth portions (18), each being provided between a pair of the notches (17).

8. An impeller for a blower according to any one of claims 5 to 7, characterized in that the plurality of blades (15) include a blade (15X) in which the notches (17) are provided, and a blade (15Y) in which the notches (17) are not provided, and

wherein the blade (15X) in which the notches (17) are provided and the blade (15Y) in which the notch (17) are not provided are alternately arranged.

9. An impeller for a blower comprising a plurality of impellers continuously provided on the same rotational axis, being characterized by:

in the plurality of impellers, the impellers positioned at both ends of the blower are formed by the impeller (7Z) for the blower according to any one of claims 5 to 8, and the other impellers are formed by the impeller (7) for the blower

according to any one of claims 2 to 4.

10. The impeller for a blower according to any one of claims 1 to 9, characterized in that each smooth portion (18) is formed along a side edge of the blade (15).

11. The impeller for a blower according to any one of claims 1 to 10, characterized in that a shape of each of the notches (17) is a triangular shape.

12. The impeller for a blower according to claim 11, characterized in that an arcuate portion (17a) is formed in a bottom portion of each of the notches (17).

13. The impeller for a blower according to claim 11 or 12, characterized in that in a case where a pitch of the notches (17) is denoted as  $S$ , and a length of each of the smooth portions (18) is denoted as  $M$ , a rate  $M/S$  of the length  $M$  of the smooth portions (18) to the pitch  $S$  of the notches (17) is set to  $0.2 < M/S < 0.9$ .

14. The impeller for a blower according to claim 11 or 12, characterized in that in a case where a pitch of the notches (17) is denoted as  $S$ , and a length of each of a smooth portions (18) is denoted as  $M$ , a rate  $M/S$  of the length  $M$  of the smooth portions (18) to the pitch  $S$  of the notches (17) is set to  $0.3 < M/S < 0.8$ .

15. The impeller for a blower according to any one of claims 11 to 14, characterized in that in a case where a chord length of each of the blades (15) is denoted as  $L$ , and a depth of each of the notches (17) is denoted as  $H$ , a rate  $H/L$  of the depth  $H$  of the notches (17) to the chord length  $L$  of the blades (15) is set to  $0.1 < H/L < 0.25$ .

16. The impeller for a blower according to any one of claims 2 to 15, characterized in that the shapes of the plurality of notches (17) are identical, and the length of the respective smooth portions (18) are set at random.

5

17. The impeller for a blower according to claim 16, characterized in that the plurality of blades (15) are provided with blade groups including a plurality of kinds of blades (15A, 15B, 15C) in which the lengths of the respective smooth portions (18) are set at random.

10

18. The impeller for a blower according to any one of claims 2 to 15, characterized in that the respective notches (17) in the adjacent blades (15) are set such as not to be positioned on a concentric circle having a center coinciding with the rotational axis.

15

19. An impeller for a blower according to any one of claims 2 to 18, characterized by a rotation shaft (16) arranged on the rotational axis.

20

20. An air conditioner characterized by the impeller for the blower according to any one of claims 2 to 19.

25

21. An air conditioner characterized by: the impeller (7) for the blower according to any one of claims 2, 4, 5 and 7 to 15; and a casing (1) that surrounds the impeller (7) and has a tongue portion (11) preventing a back flow of air flow blowing out of the impeller (7),

30

wherein a plurality of notches (17) having an identical shape are formed coaxially on an outer edge (15a) of each of the blades (15), and

wherein a plurality of projections (19) are provided on the tongue portion (11), and the respective projections (19) correspond to the respective notches (17) provided on the

35

outer edge (15a).

22. An air conditioner characterized by: the impeller (7) for the blower according to any one of claims 2, 4, 5 and 7 to 15; and a casing (1) that surrounds the impeller (7) and has a guide portion (10) for guiding an air flow blowing out of the impeller (7),

wherein a plurality of notches (17) having an identical shape are formed coaxially on an outer edge (15a) of each of the blades (15), and

wherein a plurality of projections (20) are provided on the guide portion (10), and the respective projections (20) correspond to the respective notches (17) provided on the outer edge (15a).